

CLAIMS

What is claimed is:

1. A method of separating adhered matter from a surface of a conductive substrate comprising:

producing gaseous hydrogen by electrolyzing water in contact with said surface of said substrate, dislodging said adhered matter by force of said evolved hydrogen; and

transporting said dislodged matter from a vicinity of said surface.

2. The method of Claim 1, wherein said electrolyzing is conducted at a voltage greater than the electrolysis voltage of water.

3. The method of Claim 1, wherein said dislodged matter is transported from a vicinity of said surface by flow of electrolyte via an eductor.

4. The method of Claim 1, wherein said transporting of dislodged matter is conducted in the presence of a fluid that entrains said dislodged matter.

5. The method of Claim 4, wherein said fluid comprises said water in contact with said surface of said substrate.

6. The method of Claim 4, wherein said transporting comprises movement of at least one of said surface and said fluid relative to one another.
7. The method of Claim 6, wherein said fluid moves.
8. The method of Claim 6, wherein said substrate moves.
9. The method of Claim 4, wherein said fluid has a density sufficient to entrain said dislodged matter.
10. The method of Claim 1, wherein said conductive substrate constitutes a cathode.
11. The method of Claim 2, wherein the voltage is at least 2 volts.
12. The method of Claim 2, wherein voltage is at least 5 volts.
13. The method of Claim 2, wherein the voltage is up to about 20 volts.
14. The method of Claim 1, wherein the electrolyte medium comprises a basic electrolyte.

15. The method of Claim 1, wherein the electrolyte medium comprises an acidic electrolyte.

16. The method of Claim 1, wherein the electrolyte medium comprises sodium carbonate in an amount of about 20 to about 30 grams per litre of electrolyte medium.

17. The method of Claim 1, wherein the pH of the electrolyte medium is in a range of about 3 to 13.

18. The method of Claim 1, wherein the electrolyte medium comprises trisodium phosphate.

19. The method of Claim 1, wherein said electrolyzing is at a current density of less than one amp per square decimeter (A/dm^2).

20. The method of Claim 19, wherein said current density is in a range of about 0.1 to about 0.3 A/dm^2 .

21. A method for applying coating onto a surface of a vehicle part that is electrically conductive, comprising:

cleaning the surface with a solvent;

immersing the part in an electrolyte solution while applying a potential of electric current between the surface of the part and a counter-electrode sufficient to generate hydrogen at the surface; and then

removing the part from the electrolyte solution; and

applying a coating to the surface removed from the electrolyte.

22. The method of Claim 21, wherein supply of electric current is initiated before the immersing.

23. The method of Claim 21, wherein immersion occurs for a time period of up to about 2 minutes.

24. The method of Claim 21, wherein immersion occurs for a time period of at least about 10 seconds.

25. The method of Claim 21, wherein the potential of electric current continues to be supplied while the conductive substrate is being removed from the electrolyte medium.

26. The method of Claim 21, wherein the removed substrate is rinsed before the coating is applied.

27. The method of Claim 21, wherein said solvent comprises water or pressurized water.

28. The method of Claim 21, wherein said coating is applied by immersing said vehicle part in a solution comprising a film-forming component, and applying a potential of electric current between said vehicle part and a counter-electrode.

29. The method of Claim 21, further comprising baking the applied coating.